

2300 Series Two Channel Vibration Monitors

Bently Nevada® Asset Condition Monitoring

Description

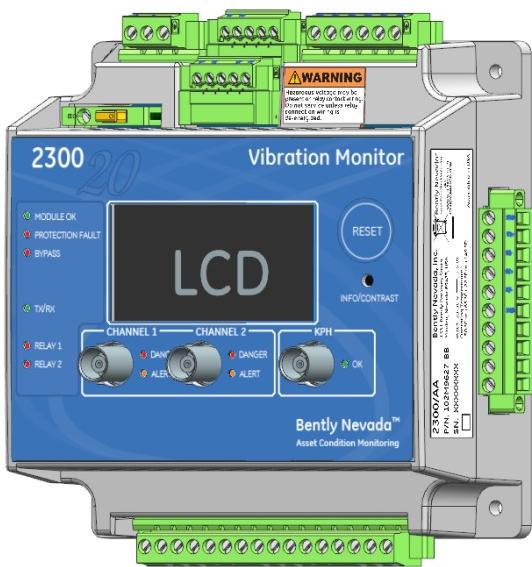
The 2300 Monitors feature two seismic channels and a speed channel, providing continuous monitoring and protection for BOP (Balance of plant) equipment. It is a perfect match for proactively managing your assets, rather than waiting until production outages to replace equipment.

The 2300 series monitors enable condition based monitoring and protection with support for various interfaces and functions. Inputs include seismic and speed transducers, and outputs include relays, buffered output, TCP/IP Ethernet, and an LCD display. This monitor is available with either 4-20 mA output (2300/20) or a TrendMaster SPA line interface (2300/25).

The 2300/20 Monitor can be used to replace legacy Bently Nevada monitors such as the 1900/27, but more importantly it is a full featured monitor for use in monitoring and protecting assets such as motors, pumps, and fans.

The monitor is software configurable, and includes configuration software. There is also an integrated LCD and multiple LEDs to show the channels' real-time data and status locally.

Effective plant asset management, and particularly effective fleet management of machinery assets, often depends on remote access using condition monitoring software such as System 1.



imagination at work

Specifications and Ordering Information

Part Number 105M0340-01

Rev. A (01/15)

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Monitor Key Features

2300/20

- Two – 4-20mA outputs
- Two relay outputs with programmable setpoints
- Ethernet 10/100 Base-T communication for configuration using Bently Nevada Monitor Configuration software (included)
- One dedicated speed and Keyphasor channel supporting Proximity probes, Magnetic pickup and Proximity switch type sensors
- Three buffered transducer outputs (including keyphasor signal) providing short circuit and EMI protection. Buffered outputs for each signal are through BNC connectors.
- Continuous monitoring and protection
- LCD display showing vibration amplitude, setpoints, and speed.
- Two acceleration inputs with synchronized sampling for advanced diagnostics.
- Key measurements(Direct 0-pk, pk-pk, True RMS, Derived pk, integrated direct pk, Speed) real-time provided with alarm configuration
- LEDs show the monitor status
- Local contacts for positive engagement of channel bypass, configuration lockout, and reset
- Optional Modbus over Ethernet

2300/25

- Trendmaster SPA interface
- Two relay outputs with programmable setpoints
- Ethernet 10/100 Base-T communication for configuration using Bently Nevada Monitor Configuration software (included)
- One dedicated speed and Keyphasor channel supporting Proximity probes, Magnetic pickup and Proximity switch type sensors
- Three buffered transducer outputs (including keyphasor signal) providing short circuit and EMI protection. Buffered outputs for each signal are through BNC connectors.
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- LEDs show the monitor status
- Local contacts for positive engagement of channel bypass, configuration lockout, and reset
- Optional Modbus over Ethernet

Recommend for Demonstration Kit

2300/20_KIT-003

- 1 - 2300/20 Monitor
- 1 - 6 ft shielded Ethernet cable
- 2 - Accelerometer sensors
- 2 - 4.8M accelerometer cables

To be ordered separately

106M7607-01 Power supply: 110/220 VAC to 24 VDC DIN mount (30W power supply package, -25°C ~70°C)

Specifications

Inputs / Outputs

Power Input:

- DC Input: 18~36VDC, max 7.5W

Supports 2 seismic channels:

- Supports ICP accelerometers
 - Bandpass variable: 0.2 Hz High pass, 20 kHz Low pass
 - Scale Factor range: 5 to 1000 mV/g
 - Full scale range: 2 to 80 g peak
 - Bias output voltage: -12VDC
 - Configurable Upper OK limit: -0.25 to -22 V (greater than lower ok)
 - Configurable Lower OK limit: -0.25 to -22 V (less than upper ok)
 - Current Sink Source: 3.3 mA ± 5%
 - Open Circuit Voltage: -21 to -24 VDC
 - Accuracy: ±1% of full scale range
- Supports custom accelerometers (2 or 3 wires)

Speed/Keyphasor* Inputs

- Supported Keyphasor transducers include:
 - Proximity probe
 - Proximity switch
 - Magnetic Pickup
- Supports multiple events per revolution and event ratios for speed inputs up to 20 kHz
- Threshold voltage resolution: 0.1VDC
- Proximity Transducer Interface:
 - Supply Voltage: -22.8 to -25.2 VDC
 - Maximum Rated Current: 15 mA
 - Short Circuit Current: 15.1 mA to 23.6 mA
 - Accuracy: ±1% of full scale range
 - Input Impedance: 3-wire Voltage Mode, 10 kΩ
 - Rpm range: 1 to 120,000
- Proximity Switch Interface:

- Supply Voltage: -10 to -24 VDC
 - Lower Not Ok limit: -2.75 ±0.05 V
 - Rpm range: 1 to 120,000
- Magnetic Pick up:
 - Input voltage up to ±125V (250Vp-p)
 - Rpm range: 200 to 120,000

Contact Inputs

Monitor provides the capability of 3 contact inputs with terminals. One is used for configuration lock, one is for alarm reset function, and the 3rd one is used for monitor Alarm/Relay Inhibit.

- Activate: 0 to 10 kΩ
- De-activate: 150 kΩ to infinite

Button Inputs

- External button to reset alarm and relay
- One buried button provides 3 functions:
 - Display monitor information including:
 - User account/Password
 - IP address
 - FW/HW version
 - LCD contrast adjustment
 - Reset settings to default including:
 - User account name
 - Password
 - Network configuration

Jumper between COM & Chassis GND

- There is a 2-pin terminal interface which allows connection of COM and Chassis GND together.
- Alternatively, COM can be connected to earth ground separately through a terminal.

Buffered Output

- There are three buffered outputs available on the monitor through BNC connectors.

Relay Output

- There are two dry-contact relay outputs
- May be normally energized or de-energized
- Relay circuit specification
 - Type: Single pole, double throw

- Sealing: Epoxy sealed
- Contact life:
100,000 cycles @ 5 amps 250 VAC
200,000 @ 1 amp, 24 VDC
- Insulation resistance:
1000 MΩ minimum @ 500 VDC
- Relay closed contact resistance:
1 Ω maximum
- Relay open contact resistance:
1 MΩ minimum
- Maximum switched contact voltage:
400V AC /150V DC
- Maximum breaking contact current:
6A @250VAC /6A @24VDC
- Maximum switched power:
1500VA AC /150 Watts DC

LEDs

- OK: Indicates when the monitor is operating properly.
- Protection fault: indicates a problem with the system preventing normal operation.
- User inhibit: indicates the relays have been intentionally inhibited from operation.
- Relay status: indicates if relays have been activated
- TX/RX: Indicates the Ethernet status and monitor communicating with remote software
- Speed channel status
- Channel Alarm Status:
 - Alert LED: engages if any channel is in alert state
 - Danger LED: engages if any channel is in danger state

LCD

LCD display allows viewing machine speed, vibration levels, setpoints, and configuration information.

Communications

Ethernet

- Ethernet, 10Base-T and 100Base-TX. Conforms to IEEE802.3.
- RJ-45 for 10Base-T/100Base-TX Ethernet cabling.
- Cable length: 100 meters (328 feet) maximum.

Environmental Limits

Operating Temperature:

- -30 °C to +65 °C (-22 °F to +149 °F)

Storage Temperature:

- -40 °C to +85 °C (-40 °F to +185 °F)

Humidity:

- Up to 95%, non-condensing

Battery Life for Real Time Clock:

- Powered: 38 years @ 50°C (122 °F)
- Un-powered: 12 years @ 50°C (122 °F)

Compliance and Certifications

General and Electrical Safety:

UL Std. No. 61010-1 (3rd Edition)

CAN/CSA C22.2 No. 61010-1-12

2006/95/EC Low Voltage Standard:

EN61010-1: 2010

European Community Directives:

2006/95/EC Low Voltage

EMC

Standards:

EN61000-6-2 Immunity for Industrial Environments

EN61000-6-4 Emissions for Industrial Environments

EN61326-1 Electrical equipment for measurement, control and laboratory use - EMC requirements

European Community Directives:

EMC Directive 2004/108/EC

Hazardous Area Approvals

Approval Option (01)

CSA, Canada and U.S.*

Class I, Division 2/Zone 2

ATEX: II 3G Ex nA nC [ic] IIC T4 Gc

IECEx: Ex nA nC [ic] IIC T4 Gc

Intrinsic Safety Parameters:

For Proximity Transducer:

Uo: 24VDC; Io: 46mA; Co: 200nF; Lo: 1mH

For Accelerator/Velomotor Transducer:

Uo: 24VDC; Io: 3.3mA; Co: 200nF; Lo: 1mH

*CSA, Canada and U.S. will be available in April of 2014.

For further certification and approvals information, visit the following website: www.ge-mcs.com/bently

Physical

Dimensions (Width x Depth x Height)

127mm x 127mm x 76.2mm (5in x 5in x 3in)

Weight

1.03kg (2.26lbs)

Mounting

Panel mount or DIN rail (adapter included)

Ordering Information

Two Channel Monitor

2300/20-AA: Monitor with 4-20ma Outputs
(including DIN rail mount assembly, manual and monitor configuration software)

AA: Approvals Option

00
None

02
Multiple Explosive Atmosphere Certifications (ATEX/IECEx)

2 - 4.8M accelerometer cables

(Excluding keyphasor sensor, enclosure and 24 VDC power supply*)

BB: Approvals Option

00
None

02
Multiple Explosive Atmosphere Certifications (ATEX/IECEx)

*We provide 2 kinds of power supplies with different temperature range and different power. Please check **Accessories** in below for the details.

2300/20_KIT-AAA-BB: Bently Nevada 2300/20 Condition Monitoring System Kit

AAA: Configuration

001

1 - 2300/20 Monitor
1 - 6 ft shielded Ethernet cable
1 - 14x12x8 in fiberglass housing with window
2 - Accelerometer sensors
2 - 4.8M accelerometer cables
(Excluding keyphasor sensor and 24 VDC power supply*)

002

1 - 2300/20Monitor
1 - 6 ft shielded Ethernet cable
1 - 14x12x8 in fiberglass housing with window
1 - Accelerometer sensor
1- 4.8M accelerometer cable
(Excluding keyphasor sensor and 24VDC power supply*)

003

1 - 2300/20 Monitor
1 - 6 ft shielded Ethernet cable
2 - Accelerometer sensors

Accessories

Order Information and Graphs

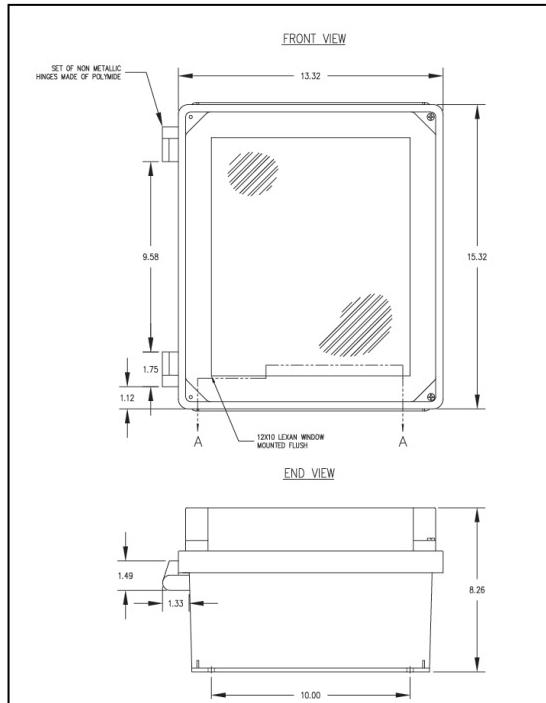
106M7607-01 Power supply: 110/220 VAC to 24 VDC DIN mount (30W power supply package, -25°C ~70°C, 35X99X95 mm (1.38x3.90x3.74 in))

106M6694-01 Power supply: 110/220 VAC to 24 VDC DIN mount (120W power supply package, -40°C ~70°C, 40X130X125 mm (1.57x5.12x4.92 in))

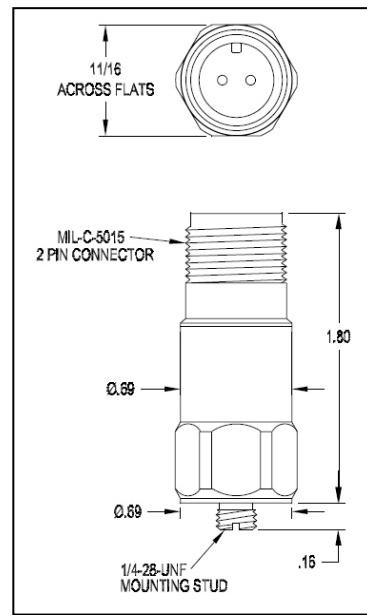
105M6193-01 Fiberglass NEMA 4X/IP68 weatherproof housing with window in door (includes mounting plate for monitor)

Dimensions (Width x Depth x Height)

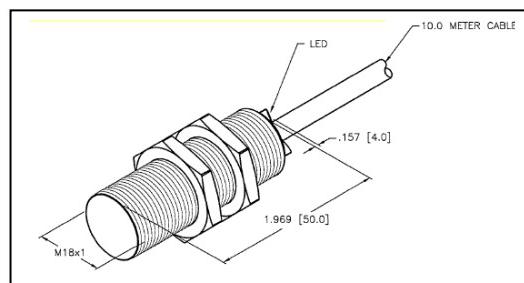
338.3mm x 389.1mm x 209.8mm
(13.3in x 15.3in x 8.2in)



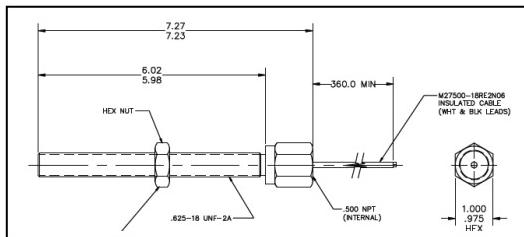
AM3100T2-ZZ Accelerometer sensor



100M0741 Proximity Switch



284947 Magnetic Pickup



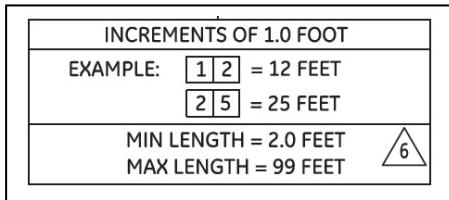
Proximity Probes

Please refer to proximity probe datasheet (**141194-01**) for details

02120015 Bulk Cable from Proximity sensor to monitor (500 feet)

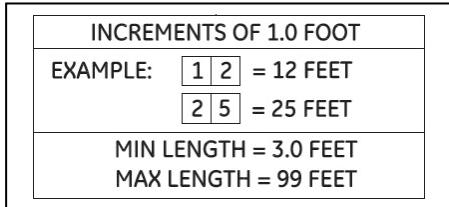
9571-AA Low cost cable for accelerometer

AA: From "20" to "99" Increments of 1.0 foot



84661-AA Armored cable for accelerometer

AA: From "30" to "99" Increments of 1.0 foot



CB2W100-AAA Cable for accelerometer

AAA:

0 1 5	15 feet (4.8 m)
0 3 2	32 feet (9.8 m)
0 6 4	64 feet (19.5 m)
1 1 2	112 feet (34.1 m)
1 2 5	125 feet (38.1 m)
1 5 0	150 feet (45.7 m)
2 0 0	200 feet (61.0 m)
2 5 0	250 feet (76.2 m)

286244 Magnetic Mounting base 1/4-28 threaded hole

105M6203-01 Spare 35mm DIN rail mount and screws (included with 2300/20 monitor)

Ethernet Cables

Standard 10 Base-T/100 Base-TX Shielded Category 5 Cable with RJ-45 connectors (solid conductor)

138131-AAA

AAA: Cable Length:

0 0 6	6 feet (1.8 m)
0 1 0	10 feet (3.0 m)
0 2 5	25 feet (7.6 m)
0 4 0	40 feet (12.2 m)
0 5 0	50 feet (15.2 m)
0 7 5	75 feet (22.9 m)
0 8 5	85 feet (25.9 m)
1 0 0	100 feet (30.5 m)

Software

100M9465-01

BN Monitor Configuration SW DVD

Version 4.0 or greater

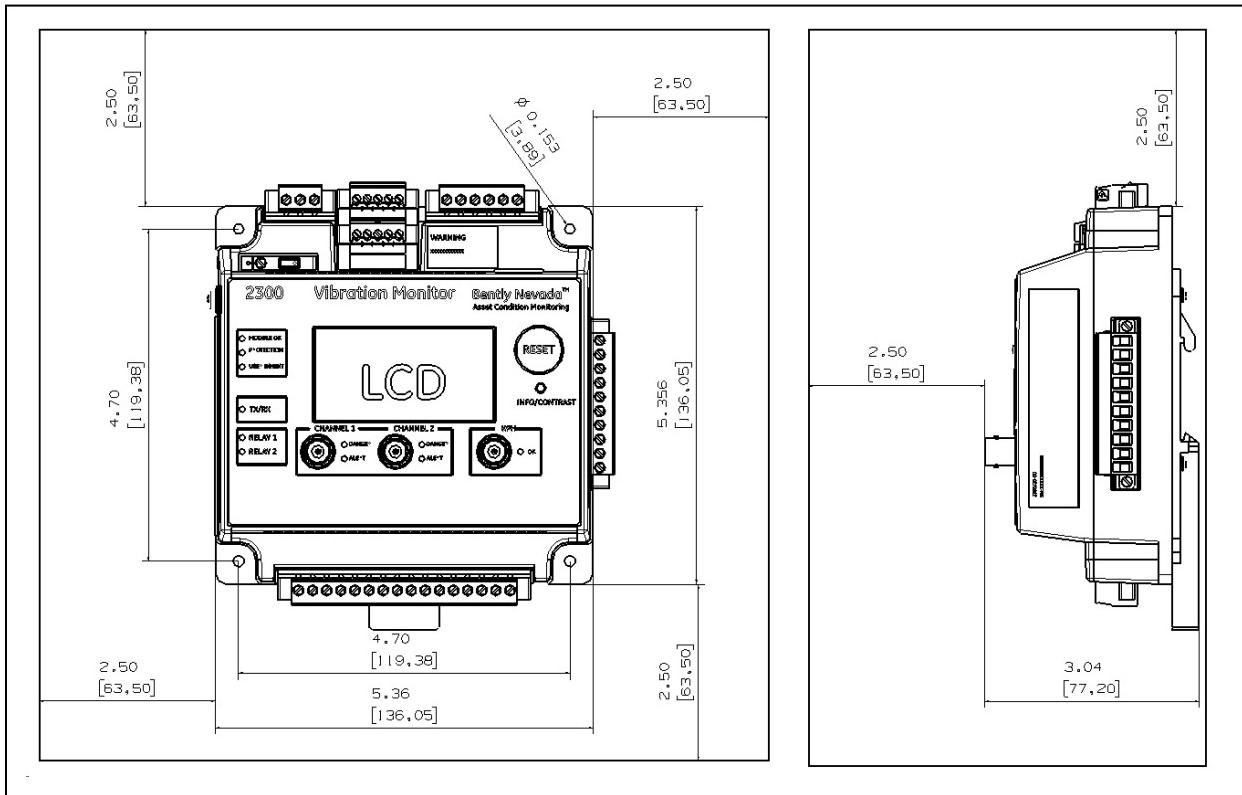
(DVD including BNMC Configuration Guide)

User Manual

105M0341-01

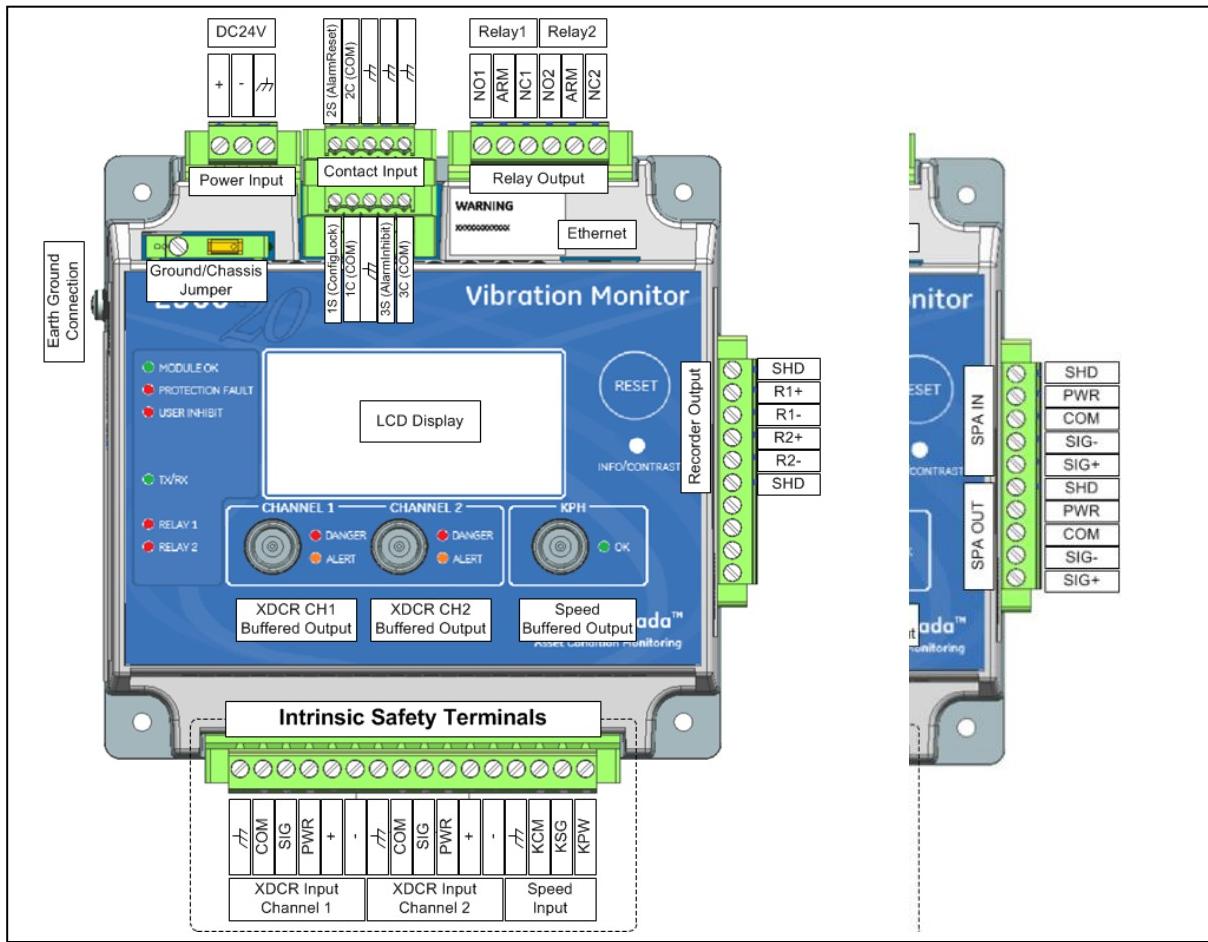
Operation and Maintenance Manual

Graphs and Figures



The monitor must have 2.5 inch clearance on each side for wiring installation.

Wiring Diagram



2300/20 and 2300/25 uses the same interface connector for recorder output or SPA output.

* Denotes a trademark of Bently Nevada, Inc., a wholly owned subsidiary of General Electric Company.

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www.ge-mcs.com/bently